



Spectral Gamma-Ray Borehole Log Data Report

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Borehole

40-08-01

Log Event A

Borehole Information

Farm : <u>S</u>	Tank : <u>S-108</u>	Site Number : <u>299-W23-178</u>
N-Coord : <u>36,072</u>	W-Coord : <u>75,747</u>	TOC Elevation : <u>665.82</u>
Water Level, ft :	Date Drilled : <u>11/1976</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

Borehole Notes:

This borehole was drilled in March 1976 to a depth of 105 ft. The borehole was started with a 20-ft length of 8-in. casing and completed at a depth of 100 ft with 6-in.-nominal-diameter carbon-steel casing. The casing string was withdrawn to a depth of 100 ft and grout was placed in the bottom 5 ft of the borehole. The 8-in. surface casing was removed on completion of the borehole and the annulus between the permanent 6-in. casing and the portion of the borehole wall drilled with the 8-in. casing was filled with grout.

The thickness of the permanent casing wall is assumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. steel tubing.

The zero reference for the SGLS logs is the top of the casing. The casing lip is approximately even with the ground surface.

Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>05/1996</u>	Calibration Reference : <u>GJPO-HAN-5</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>06/18/1996</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>97.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>0.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Borehole

40-08-01

Log Event A

Analysis Information

Analyst : H.D. Mac Lean

Data Processing Reference : P-GJPO-1787

Analysis Date : 03/21/1997

Analysis Notes :

This borehole was logged by the SGLS in a single logging run with a centralizer. The field verification spectra acquired immediately preceding and following the logging run met the acceptance criteria established for peak shape and system efficiency. The energy and peak-shape calibration from the post-survey field verification spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging runs. There was negligible gain drift during the logging runs and it was not necessary to adjust the established channel-to-energy parameters during the processing of log data to maintain proper peak identification.

Casing correction factors for a 0.280-in.-thick casing were applied during the analysis.

Cs-137 was the only man-made radionuclide detected in this borehole. Cs-137 contamination was detected at the ground surface and in the upper 1 ft of the borehole. Except at the surface, measured concentrations in the contaminated interval were about 0.3 pCi/g. The maximum measured Cs-137 concentration was about 3 pCi/g at the surface; however, this value is not a true concentration because the configuration of the detector system at the surface does not conform to the configuration used in the calibration model.

The logs of the naturally occurring radionuclides show that the K-40 concentrations increase from about 7 pCi/g between the ground surface and 18 ft to about 9 pCi/g below this depth. There is an increase in the K-40 and Th-232 concentrations below a depth of about 48 ft and a decrease between 54 and 57 ft. The K-40 concentrations increase from about 12 pCi/g between 58 and 63 ft to about 17 pCi/g below 63 ft. The U-238 and Th-232 concentrations also increase below 63 ft.

The SGLS total count log plot reflects the varying concentrations of the naturally occurring radionuclides. The Cs-137 contamination at the top of the borehole is also reflected in the SGLS total count log.

Details concerning the interpretation of data for this borehole are presented in the Tank Summary Data Reports for tanks S-105 and S-108.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The naturally occurring radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes both the man-made and naturally occurring radionuclides, the total-count log plot, as well as the Tank Farm gross-gamma log. The Tank Farm gross-gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma log plot to coincide with the SGLS data.